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EXAMINER

VERDIER, CHRISTOPHER M

ART UNIT	PAPER NUMBER
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3745

DATE MAILED: 06/17/2003

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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/680,400

Applicant(s)

ICHIRYU, TAKU

Examiner

Christopher Verdier

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 05 May 2003.
- 2a) ☒ This action is FINAL. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1, 2 and 4 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1, 2 and 4 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 05 May 2003 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☒ The proposed drawing correction filed on 05 May 2003 is: a) ☐ approved b) ☒ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

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Applicants' Amendment dated May 5, 2003 has been carefully considered but is deemed non-persuasive. Claims 1-2 and 4 are pending. Applicants are thanked for submitting the Formal Drawings of May 5, 2003, however these drawings are not acceptable, because the feature in claim 4 of the external screw thread provided on a shaft portion of the fastening bolt and a nut engaging the external screw thread acting as the fastening means for abutting the end face of the sleeve must be shown as a separate embodiment, not combined into the embodiment of figure 2. Note the specification, page 19, lines 31-37 and page 20, lines 1-4, which state that this is a different embodiment. Therefore, the change to figure 2 showing screw threads 5e should be removed.

Applicants have noted that the subject matter of claim 3 has been incorporated into independent claims 1 and 2, and have argued that the feature of the enlarged diameter portion integrally formed on a shaft portion of the fastening bolt acting as the fastening means for abutting the end face of the sleeve makes it possible to reduce the diameter of the bolt hole aperture of the outer surface of the casing, because the diameter of the fastening bolt protruding from the outer surface of the casing can be reduced to a value smaller than the diameter of the fastening means. Applicants have also argued that because the fastening means does not abut against the outer surface of the casing, a spot facing is not required for the outer surface of the casing, and this makes it possible to reduce the spacing of the fastening bolts and increase the tightening force of the casing. Applicants also have argued that by reducing the diameter of the bolt hole aperture of the casing, the flexural rigidity of the casing wall can be increased by increasing the geometric moment of inertia of the casing, and that since only the shaft protrudes

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from the casing, the diameter of the bolt hole aperture can be reduced to a value slightly the same as the diameter of the shaft of the fastening bolt, and that this advantage cannot be obtained by the fastening arrangement disclosed in Swiss Patent 171,458. Applicants have further argued that by providing a fastening means in the form of an enlarged portion on the shaft portion of the bolt, the portion of the shaft outside of the enlarged portion is only used for tightening the bolt, with no tensile strength being exerted on that portion of the shaft once the bolt has been tightened, allowing reducing the diameter of the bolt to a value sufficient for enduring the tightening torque of the bolt only during a short period, making it possible to further reduce the diameter of the portion of the shaft protruding from the casing, allowing the diameter of the bolt hole aperture to be further reduced. These arguments are not persuasive. It is well settled that all the utilities or benefits of the claimed invention need not be explicitly disclosed by the prior art references to render the claims unpatentable under section 103 (see *In re Dillon*, 919 F. 2d 688, 692, 696, 16 USPQ2d 1897, 1901, 1904 (Fed. Cir 1990) (en banc), cert denied, 500 U.S. 904 (1991). See also *In re Kemps*, 97 F. 3d 1427, 1429-30, 40 USPQ2d 1309, 1311-12 (Fed. Cir. 1998), which stated that all the benefits need not be explicitly disclosed by the prior art to render the claims unpatentable under section 103. The fact that Applicants have recognized inherent properties that would result from the modification of Swiss Patent 171,458 of replacing the bolt 5 and nut 6 arrangement taught by the Swiss Patent 171,458 with a bolt having a hex head, such that the hex head replaces the nut 6, for the purpose of joining the casings together, does not render the claims patentable. It is also noted that all of the above features upon which Applicants rely are not recited in the rejected claims. Although the claims are interpreted in light of the

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specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

Applicants have also argued that it would not be obvious to replace the bolt and nut arrangement of Swiss Patent 171,458 with a bolt having a hex head, that there is a lack of a purported motivation for modifying the Swiss Patent 171,458, because the purpose of "joining casings together" is not a motivation for the modification, because the nut of the Swiss Patent 171,458 also provides the function of joining the casings together. These arguments are not persuasive because a person of ordinary skill in the art, and a mechanic clearly would have know that bolts having hex heads at one end and a threaded shank at the other end are old and well-known in the art, are readily available in hardware stores, and are well-known fasteners for the purpose of joining members together. Therefore, it would have been obvious to a person having ordinary skill in the art to replace the bolt 5 and nut 6 arrangement taught by the Swiss Patent 171,458 with a bolt having a hex head, such that the hex head replaces the nut 6, for the purpose of joining the casings together.

Applicants have reiterated their previous argument that the subject matter of claims 1 and 2 previously set forth defines over the prior art of record and it would not have been obvious to modify the admitted prior art or Japanese Patent 58-138,207 by introducing the bolt and sleeve arrangement of the Swiss Patent 171,458 therein, because synergy results from the use of a sleeve in a tangential bolt hole in the form of a reduction in the thinning of the casing. Applicants have further argued that the sleeve in combination with a tangential bolt hole

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overcomes a problem unique to tangential bolt holes, in contrast to one that does not arise for configurations in which the bolt holes are laterally extending flanges. Applicants have further argued that the absence of synergism does not detract from non-obviousness, but its presence points to non-obviousness. These arguments are not persuasive for the reasons previously advanced by the examiner. MPEP 2141 states that the standard of patentability to be applied in obviousness rejections is that set forth in *Graham v. John Deere*, 383 U.S. 1, 148 USPQ 459 (1966), and that nowhere did the Supreme Court state that a ““new or different function”” and ““synergistic result”” test supersede a finding of nonobviousness or obviousness under the *Graham* test. The CAFC in *Stratoflex, Inc. v. Aeroquip Corp.*, 713 F.2d 1530, 1540, 218 USPQ 871, 880 (Fed. Cir 1983) stated that “A requirement for “synergism” or a “synergistic effect” is nowhere found in the statute, 35 U.S.C. When present, for example in a chemical case, synergism may point toward nonobviousness, but its absence has no place in evaluating the evidence on obviousness. The more objective findings suggested in *Graham*, supra, are drawn from the language of the statute and are fully adequate guidelines for evaluating the evidence relating to compliance with 35 U.S.C. § 103. *Bowser Inc. v. United States*, 388 F.2d 346, 156 USPQ 406 (Ct. Cl. 1967).”

Finally, with regard to Applicants' argument that the examiner has not addressed why it would have been obvious to have combined the admitted prior art of Japanese Patent 58-138,207 with Swiss Patent 171,458, despite the presence of synergism which points towards non-obviousness, this argument is not persuasive. The previous Office actions all clearly and unambiguously set forth the motivation for the above proposed combination of references, which

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is for the purpose of reducing leaking by preventing the expansion differences between the bolts, nuts, and casings (which are high temperature pipes) from permanently changing the form of the bolts, nuts, or casings. The previous Office actions also clearly explained that the Swiss Patent 171,458 is from the analogous art of high temperature pipe joints, and that one of ordinary skill in the art would have looked to the art of high temperature pipe joints in order to solve the problem of differential thermal expansion in high temperature hydraulic casings. With regard to Applicants' arguments that the presence of synergism points towards non-obviousness, and that unexpected advantages provide evidence of unobviousness which cannot be properly ignored, the examiner disagrees with Applicants that the purported synergy renders the claim patentable, because the requirement for "synergism" or a "synergistic effect" is nowhere found in the statute, 35 U.S.C, as set forth in detail previously above.

Drawings

The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the feature in claim 4 of the external screw thread provided on a shaft portion of the fastening bolt and a nut engaging the external screw thread acting as the fastening means for abutting the end face of the sleeve must be shown as a separate embodiment in the form of a new drawing figure, not combined into the embodiment of new figure 2, as Applicants have proposed. In new figure 2, the screw threads 5e should be removed. Applicants are reminded that the reference to the screw thread 5e as added to page 11, line 22 of the specification should be deleted. The feature recited in claim 4 must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

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A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

Specification

The disclosure is objected to because on page 11, line 22, the description of the external screw thread 5e being formed on the shaft of the bolt is inaccurate, and should be referred to in a separate embodiment, for the reason set forth above. Appropriate correction is required.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claim 4 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. In claim 4, line 3, "the fastening means" is unclear as to which element this refers to, because the "fastening means" has been removed in the most recent amendment to claim 2, upon which claim 4 depends. Claim 4 is now inaccurate, because claim 2 from which claim 4 depends has been amended to recite the feature of the enlarged diameter portion integrally formed on a shaft portion of the fastening bolt that abuts an end of the sleeve opposite to the joint face. Claim 4 recites an external screw thread provided on a shaft portion of the fastening bolt and a nut engaging the external screw thread acts as the fastening means for abutting the end face of the

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sleeve. The recited features of claim 4 are a separate embodiment as set forth in Applicants' specification, page 19, lines 31-37 and page 20, lines 1-4, which clearly shows that that this is a different embodiment. Therefore, claim 4 recites features of a different embodiment which are excluded by the limitations in independent claim 2 of the enlarged diameter portion integrally formed on a shaft portion of the fastening bolt that abuts an end of the sleeve opposite to the joint face.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-2 and 4 (as far as claim 4 is definite), are rejected under 35 U.S.C. 103(a) as being unpatentable over Applicant's Prior Art Figure 8 in view of Swiss Patent 171,458. Applicant's Prior Art Figure 8 discloses a fastening arrangement for a horizontally split casing for a hydraulic machine substantially as claimed including first 210a and second 220a casing halves joined together by joining joint faces, with the first and second casing halves being provided with bolt holes 210c, 220c that are aligned with each other when the first and second casing halves are assembled, to form a continuous bolt hole crossing the joint. The bolt hole 220C in the second casing half is internally threaded. However, Applicant's Prior Art Figure 8

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does not disclose that the bolt hole in the first casing half is provided with an internal screw thread with a sleeve having an external screw thread that is fitted into the bolt hole of the first casing half and engages the internal screw thread of the bolt hole of the first casing half, with a fastening bolt having fastening means at the portion apart from the external screw thread, with the fastening means abutting an end of the sleeve opposite to the joint face when the fastening bolt is screwed into the bolt hole of the second casing half, with tensile force being generated in the fastening bolt, with an external screw thread being provided on a shaft of the fastening bolt and a nut engaging the external screw thread acting as the fastening element for abutting the end face of the sleeve.

Swiss Patent 171,458 (figure 1) shows a fastening arrangement for a horizontally split casing including first 3 and second 4 casing halves joined together by joining joint faces, with the first 3 and second 4 casing halves being provided with unnumbered bolt holes that are aligned with each other when the first and second casing halves are assembled, to form a continuous bolt hole crossing the joint. The bolt holes in the first and second casing halves are provided with internal screw threads with a sleeve 9 having an external screw thread that is fitted into the bolt hole of the first casing half and engages the internal screw thread of the bolt hole of the first casing half, with a fastening bolt 5 having an external screw thread at one end that engages the internal screw thread of the bolt hole in the second casing half and fastening means 6 at the portion apart from the external screw thread, with the fastening means abutting an end of the sleeve opposite to the joint face when the fastening bolt is screwed into the bolt hole of the second casing half, with tensile force being generated in the fastening bolt, with an external

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screw thread 8 being provided on a shaft of the fastening bolt and a nut engaging the external screw thread acting as the fastening element for abutting the end face of the sleeve, for the purpose of reducing leaking by preventing the expansion differences between the bolts, nuts, and casings (which are high temperature pipes) from permanently changing the form of the bolts, nuts, or casings.

The Swiss Patent is from the analogous art of high temperature pipe joints, and one of ordinary skill in the art would have looked to the art of high temperature pipe joints in order to solve the problem of differential thermal expansion in high temperature hydraulic casings. It would have been obvious at the time the invention was made to a person having ordinary skill in the art to form the casings of Applicant's Prior Art Figure 8 with the fastening and sleeve arrangement of the Swiss Patent, for the purpose of reducing leaking by preventing the expansion differences between the bolts, nuts, and casings from permanently changing the form of the bolts, nuts, or casings.

With regard to the recitation of an enlarged diameter portion integrally formed on a shaft portion of the fastening bolt acting as the fastening means for abutting the end face of the sleeve, Official Notice is taken that bolts having hex heads at one end and a threaded shank at the other end are old and well-known in the art for the purpose of joining members together. Therefore, it would have been obvious to a person having ordinary skill in the art to replace the bolt 5 and nut 6 arrangement taught by the Swiss Patent 171,458 with a bolt having a hex head, such that the hex head replaces the nut 6, for the purpose of joining the casings together. Note concerning

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claim 4 that the Swiss Patent 171,458 shows an external screw thread 8 provided on a shaft portion of the fastening bolt 5 and a nut 6 engaging the external screw thread acts as a fastening means for abutting the end face of the sleeve 9.

Claims 1-2 and 4 (as far as claim 4 is definite), are also rejected under 35 U.S.C. 103(a) as being unpatentable over Japanese Patent 58-138,207 in view of Swiss Patent 171,458. Japanese Patent 58-138,207 (figures 1-2) discloses a fastening arrangement for a horizontally split casing for a hydraulic machine substantially as claimed including first 5a and second 5b casing halves joined together by joining joint faces 9, with the first and second casing halves being provided with bolt holes (unnumbered, near 10) that are aligned with each other when the first and second casing halves are assembled, to form a continuous bolt hole crossing the joint. The bolt hole in the second casing half 5b is internally threaded. However, Japanese Patent 58-138,207 does not disclose that the bolt hole in the first casing half is provided with an internal screw thread with a sleeve having an external screw thread that is fitted into the bolt hole of the first casing half and engages the internal screw thread of the bolt hole of the first casing half, with a fastening bolt having fastening means at the portion apart from the external screw thread, with the fastening means abutting an end of the sleeve opposite to the joint face when the fastening bolt is screwed into the bolt hole of the second casing half, with tensile force being generated in the fastening bolt, with an external screw thread being provided on a shaft of the fastening bolt and a nut engaging the external screw thread acting as the fastening element for abutting the end face of the sleeve.

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Swiss Patent 171,458 (figure 1) shows a fastening arrangement for a horizontally split casing including first 3 and second 4 casing halves joined together by joining joint faces, with the first 3 and second 4 casing halves being provided with unnumbered bolt holes that are aligned with each other when the first and second casing halves are assembled, to form a continuous bolt hole crossing the joint. The bolt holes in the first and second casing halves are provided with internal screw threads with a sleeve 9 having an external screw thread that is fitted into the bolt hole of the first casing half and engages the internal screw thread of the bolt hole of the first casing half, with a fastening bolt 5 having an external screw thread at one end that engages the internal screw thread of the bolt hole in the second casing half and fastening means 6 at the portion apart from the external screw thread, with the fastening means abutting an end of the sleeve opposite to the joint face when the fastening bolt is screwed into the bolt hole of the second casing half, with tensile force being generated in the fastening bolt, with an external screw thread 8 being provided on a shaft of the fastening bolt and a nut engaging the external screw thread acting as the fastening element for abutting the end face of the sleeve, for the purpose of reducing leaking by preventing the expansion differences between the bolts, nuts, and casings (which are high temperature pipes) from permanently changing the form of the bolts, nuts, or casings.

The Swiss Patent is from the analogous art of high temperature pipe joints, and one of ordinary skill in the art would have looked to the art of high temperature pipe joints in order to solve the problem of differential thermal expansion in high temperature hydraulic casings. It would have been obvious at the time the invention was made to a person having ordinary skill in

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the art to form the casings of Japanese Patent 58-138,207 with the fastening and sleeve arrangement of the Swiss Patent, for the purpose of reducing leaking by preventing the expansion differences between the bolts, nuts, and casings from permanently changing the form of the bolts, nuts, or casings.

With regard to the recitation of an enlarged diameter portion integrally formed on a shaft portion of the fastening bolt acting as the fastening means for abutting the end face of the sleeve, Official Notice is taken that bolts having hex heads at one end and a threaded shank at the other end are old and well-known in the art for the purpose of joining members together. Therefore, it would have been obvious to a person having ordinary skill in the art to replace the bolt 5 and nut 6 arrangement taught by the Swiss Patent 171,458 with a bolt having a hex head, such that the hex head replaces the nut 6, for the purpose of joining the casings together. Note concerning claim 4 that the Swiss Patent 171,458 shows an external screw thread 8 provided on a shaft portion of the fastening bolt 5 and a nut 6 engaging the external screw thread acts as a fastening means for abutting the end face of the sleeve 9.

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO**

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MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Christopher Verdier whose telephone number is (703)-308-2638. The examiner can normally be reached on Monday-Friday from 10:00-6:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Edward K. Look can be reached on (703) 308-1044. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9302 for regular communications and (703) 872-9303 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0861.



Christopher Verdier
Primary Examiner
Art Unit 3745

C.V.
June 14, 2003